

maximum in this month averages 88.2°, between noon and 2 p. m.

8. The preceding table contains the monthly and annual mean temperatures in Havana for the years 1887 to 1895, inclusive:

III.—MOISTURE OF THE AIR.

9. The vapor tension at the Vedado Park, Havana, during the month of January, as computed from nine years' observations, is at a minimum, averaging 12.3 millimeters, about 6 a. m. The mean maximum is 13.7 millimeters, and generally occurs at 2:30 p. m.

10. In July the minimum tension averages 19.0 millimeters, about 4:30 a. m. The mean maximum is 21.1 millimeters, and occurs shortly before 4 p. m.

11. The maximum relative humidity at the Vedado Park, Havana, during the month of January, as computed from nine years' observations, averages 86 per cent about 6 a. m. The humidity is at a minimum at 2 p. m., averaging then 64 per cent.

12. In July the maximum generally occurs about 4 a. m., and averages 90 per cent. The minimum humidity in this month takes place between noon and 1 p. m., and is on an average 66 per cent.

IV.—PRECIPITATION.

Monthly and annual mean precipitation, and greatest precipitation, Vedado Park, Havana, nine years' observations, 1887 to 1895.

Month.	Mean.	Max.	Year.	Month.	Mean.	Max.	Year.
	<i>Inches.</i>	<i>Inches.</i>			<i>Inches.</i>	<i>Inches.</i>	
January.....	2.17	6.25	1889	August.....	5.65	9.30	1889
February.....	1.98	5.00	1889	September.....	7.29	13.01	1895
March.....	2.36	4.80	1891	October.....	9.50	13.60	1891
April.....	1.26	2.85	1887	November.....	4.50	7.50	1890
May.....	5.39	17.01	1890	December.....	2.15	5.65	1893
June.....	8.14	18.45	1892				
July.....	5.05	7.25	1890	Total.....	53.39		

V.—MEAN VELOCITY OF THE WIND.

The daily mean velocity of the wind, as computed from nine years' observations, shows intervals of calm attending the daily changes of direction. The secondary maximum occurs between 2 and 4 a. m., and on the annual average is 3.5 miles per hour.

The principal maximum velocity of the wind occurs between noon and 4 p. m., and averages yearly 11.5 miles per hour.

The daily absolute maximum velocity is on the annual average 17.5 miles per hour. The following table shows the mean velocity of the wind for each month of the year, as computed from hourly observations for nine years.

Month.	Miles per hour.	Month.	Miles per hour.
January.....	9.0	August.....	6.8
February.....	9.6	September.....	7.1
March.....	9.7	October.....	8.5
April.....	9.2	November.....	10.0
May.....	8.0	December.....	9.5
June.....	7.4		
July.....	7.0	Year.....	8.4

PHENOLOGICAL OBSERVATIONS ON THE POTOMA

By Prof. F. W. VERY.

At the special Weather Bureau station, temporarily established on Cobbs Island (post office address Rock Point, Charles County, Md.), Prof. F. W. Very reports the following notes relative to animal and vegetable life, under date of May 16:

The extremes of temperature have been rather trying. I have been interested in watching the spring changes and send you a few notes.

On my arrival (April 22) the following birds were already here: Red-winged blackbird, robin, bluebird, golden-winged woodpecker, brown thrush, long sparrow, swamp sparrow, chipping sparrow, boat-tailed grackle, meadow lark, warblers of several sorts, crows, sea gulls, killdeer, plovers, turkey buzzards, the fish hawk, and swallows. Pear trees just coming into bloom. Cherry trees in full bloom. Shad bush in bloom.

April 25.—I walked through woods of pitch pine, long-leaved pine, and prickly holly, finding sassafras in bloom on the border and houstonia in the openings. Yellow warblers singing.

April 29.—Orchard oriole (new comer), green heron, king birds, far off heard song thrush, and rose-breasted grosbeak. Blackhaw (*viburnum prunifolium*) in flower all along the shore. Flowering cornel just beginning to bloom (columbine).

May 1.—Lilac in bloom.

May 2.—Pine trees in bloom and the waters of Neals Sound covered with pollen, thrown into wavy yellow veins (as in marbled paper) by the incoming tide. Willow oak in bloom.

May 6.—Garden white iris and wild blackberry in bloom.

May 8.—Oven bird and vireos singing. Hypoxis, potentilla, etc., in bloom.

May 10.—Whippoorwill singing.

May 13.—Wood pewee singing, and wild cherry in bloom.

In New England I have always regarded the coming of the wood pewee as a sure sign of settled summer weather.

May 14.—Locust trees in bloom. Hot and dry.

NOTES BY THE EDITOR.

DEATH OF MR. CYRUS ELLENBERGER.

In a letter dated San Francisco, Cal., April 6, 1900, Mr. Alexander G. McAdie says:

It is my sad duty to announce the death, on Thursday, April 5, of Mr. Cyrus Ellenberger, for many years a valued observer in the Weather Bureau. He had been on duty at this station since May, 1892, serving chiefly as chief clerk, and was regarded by all his associates as a painstaking, reliable, and faithful official. He gave the best years of his life to the work of the Weather Bureau, and was always willing to expend his energy in furthering the work of this office. For some time past he had suffered from a slow and painful disease, but he nevertheless very bravely stuck to his desk and performed the duties required of him.

STORM WAVES NOT TIDAL WAVES.

The Oregonian of Portland, Oreg., reports that a "tidal wave" did much damage at Ladysmith, Vancouver Island,

April 6. On this same date severe storms and squalls prevailed on the coasts of Oregon, Washington, and British Columbia. The southwest winds accompanying such storms raise heavy seas and pile up the water in the rivers and harbors of this coast. All the reports that have been received from Victoria relative to the so-called tidal wave seem to show that it was due entirely to the wind, and might properly be called a "storm wave," but not in any sense a tidal wave. The latter class of waves have distinct characteristics and should not be confounded with the storm waves due to wind, and, occasionally, to barometric pressure.

AN ICE STORM.

During the month of March, of the current year, the vegetation in the New York Botanical Garden, on the Bronx

River, suffered many vicissitudes. There was frost almost every night, and the average temperature was only 35°, being the coldest for thirty years. On the 10th, the anniversary of the blizzard of 1888, the minimum was only 2° above zero. A vivid picture of the ice storm that prevailed during the 15-17th is published by Mrs. Britton, the wife of the director of the garden, in the first volume of the journal of the New York Botanical Garden. She says:

Notwithstanding the cold weather of the month, there have been warm, quiet days and abundant signs of spring. The hylas were peeping and the snow-drops were blooming in the nurseries on the 10th, and robins, meadow-larks, and song-sparrows had been singing. The sap of the sugar-maples flowing from broken twigs had made icicles several inches long during the night, and a few venturesome silver-maples had thrust out their pale stamens. On the 15th the second snowstorm of the year arrived, quietly piling up eight inches of snow on the level, and changing to sleet during the night. The next morning dawned clear and cold, the sky was blue and cloudless, and every common thing stood transformed to crystal, tinkling with icicles and hung in prismatic rainbows.

We may look to the authorities of the New York garden for phenological records that will permit full and reliable comparison with similar data from other parts of the world, and with that for the early years of our own settlements.

Three meteorological stations have been established in the garden. Station 1 is located in the herbaceous grounds. Station 2 is on a low ridge in the center of the hemlock forest. Station 3 is in the central portion of the elevated plain of the fruticetum, which is bordered on the east by a deciduous forest, and on the south by artificial lakes and the hemlock forests. The thermometers are contained in shelters of the United States Weather Bureau pattern. This new meteorological station is about 12 miles northeast by north from the regular Weather Bureau station. The record at botanical garden, station 1, for April is as follows: Precipitation, 2.39 inches. Maximum temperatures, 77°, at 2 p. m. on the 30th. Minimum temperatures, 21.5°, at 6.30 a. m., on the 10th.

STORM IN YUCATAN.

A report from Merida, Yucatan, states that "a terrific hurricane struck here April 23, resulting in great loss of property." On that date an extensive area of low pressure had its southern extremity in the Gulf of Mexico, and severe local storms may have prevailed in that region, but nothing sufficiently extensive to be called a hurricane seems likely to have occurred. Apparently, this is another case of the reportorial use of high-sounding words. A destructive wind may be a norther, a tornado, a thunderstorm gust—it may even be called a wind of hurricane force—but it is not a hurricane. The latter term applies to a destructive wind circulating about a local area of low barometric pressure, and moving day after day along the surface of the earth. Later in the summer the local storms of the West Indies and Gulf of Mexico may develop into grand hurricanes, but these are not likely to occur so early as April or May.

LOCAL ANEMOMETRIC PECULIARITIES.

In the annual report for 1899 of the Fernley Observatory, at Southport, England, lat. 53° 39' 24" N.; long. 2° 59' 3" W., therefore, about twenty miles north of Liverpool, the meteorologist, Mr. Joseph Baxendell, gives some accounts of experiments with the pressure tube anemometer devised by Dines, but essentially based on the principles involved in the Hageman anemometer. He says:

Although no very thorough or detailed comparison between the indications of the Dines pressure tube anemometers at the Hesketh Park Observatory, and the Marshside station has yet been made, the aver-

age difference between the wind force at the two situations is so remarkable that it may be of interest to give, without further delay, the monthly mean values of wind velocity during 1899, at the respective stations.

The "head" of the Dines instrument at Hesketh Park is 36 feet above the summit of the highest hill or knoll in the town, and 26 feet above the top of the roof of the Fernley structure, by which the knoll is capped. It is 85 feet above mean sea level. Some further idea of its exposure and surroundings may be obtained from an inspection of the frontispiece to the annual report for 1897.

The "head" of the Dines anemometer at Marshside is 50 feet above very level ground, and 40 feet above the roof of the brick hut. It is 66 feet above mean sea level. In this case there is a very open exposure, and a large majority of winds reach the instrument without having previously encountered any seriously deflecting or obstructing object.

Mean velocity of the wind.

1899.	Hesketh Park. Miles per hour.	Marshside. Miles per hour.	1899.	Hesketh Park. Miles per hour.	Marshside. Miles per hour.
January.....	7.0	14.0	August.....	4.8	10.0
February.....	6.5	10.5	September.....	8.3	18.0
March.....	5.2	12.1	October.....	4.5	11.7
April.....	8.0	14.0	November.....	7.1	15.5
May.....	4.4	8.9	December.....	5.0	10.7
June.....	3.9	8.9			
July.....	4.6	11.8	Year.....	5.8	12.2

Every possible precaution has been taken to insure the accurate working of the two instruments. The one at Hesketh Park has been dismantled and entirely refitted, the pipes also being tested, but the differences continue as before.

Although these two anemometers are not very far apart yet there is *a priori* no special reason for surprise at the great difference between the two records. When the wind blows over an obstacle, or a series of obstacles, there is at once produced a systematic derangement in the otherwise steady streams of air which are now thrown into violent contortions and the individual currents so interfere with each other as to greatly diminish the average velocity of the wind over a large region in the rear of the obstacle. An exploration of the surrounding region usually shows that the wind is blowing its full strength in various unexpected places, between which are found minor currents due to the obstacles. Above and outside of these currents the wind also blows with full strength.

In the present case the winds reach the Marshside anemometer with much less interruption from distant trees and structures, and we can but believe that the records for the two stations differ from this reason only and not because of errors in the apparatus.

THE SEASONAL RAIN IN COLORADO.

In the annual summary of the Colorado section Mr. F. H. Brandenburg, Section Director, gives not only the annual numerical tables, but a general review for the winter 1898-99, from which it appears that much more than the normal amount of snow fell, forming vast drifts, so that on July 1, 1899, a much greater amount was stored in protected places at great altitudes than usual, giving good prospects for a steady flow in summer. Mr. Brandenburg also contributes a chapter to a discussion of long-range or seasonal forecasts. He shows that, so far as concerns the temperature records at Denver, the average temperature for a season, or a longer period, has apparently no connection with the temperature of the coming season; that, in general, an exceptionally warm spring or summer does not follow an abnormally cold winter. The compensations occur, not in the immediately following seasons, but at uncertain intervals of time.

With regard to precipitation at Denver, he finds that nota-